ENVIRONMENTAL
Fact Sheet

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • www.des.nh.gov

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Guidance on Addressing Chemical MCL Violations in Well Sources

This guidance is provided to assist small public water systems in New Hampshire to evaluate feasible and economical options to address elevated levels of radionuclides, arsenic or other chemical MCL violations in well water supplies.

Over the past few years, DES has been implementing alternative and innovative treatment technologies, which may be applied by small water systems to address MCL violations for naturally occurring contaminants, including radionuclides, arsenic, and fluoride. Additional information may be found at the Drinking Water and Groundwater Bureau web page at www.des.nh.gov , as the results from these studies and further federal guidance becomes available.

The capital and operating costs for water treatment and disposal of residuals can quickly become a burden to small water systems; therefore, DES recommends evaluating all non-treatment/ blending options **before** committing to long-term treatment upgrades. Potential non-treatment and treatment options for consideration are outlined below.

Non-treatment Options

1. **Connect to a nearby public water system** – Design and construction for interconnection of any two public water systems in New Hampshire are eligible for up to 25 percent reimbursement grant funding from DES. Contact bernard.lucey@des.nh.gov, (603) 271-2952 or for assistance with this option.

2. **Blending/Partial Treatment** – Review historical water quality and collect new samples for each well source to establish whether blending and or partial treatment may be adequate to achieve compliance.

3. **Develop new, supplemental or replacement well sources** – Shallow, gravel packed wells generally present lower levels of bedrock contaminants and may be used to blend with an existing source for addressing the radionuclides or arsenic standards. Contact Stephen Roy at (603) 271-3918 or stephen.roy@des.nh.gov for permitting assistance.

Treatment and Disposal Options

Once non-treatment options have been exhausted, possible treatment alternatives may be evaluated by reviewing the technical fact sheets and technology guidance sites listed below.

Please contact bernard.lucey@des.nh.gov , (603) 271-2952, or cynthia.klevens@des.nh.gov, (603) 271-3108 to assist you in your evaluation. Additional details are as follows.

Radionuclides
Best available treatment options are ion exchange (point of entry) and reverse osmosis (point of use). Adsorption media are also available for radium removal. These processes concentrate the contaminants and generate low-level radioactive residuals that must be disposed of accordingly.

State and federal regulations apply to packaging, transportation and disposal of radioactive wastes. Currently, any residuals classified as low-level radioactive waste must be sent to out-of-state facilities that are permitted to receive such wastes. Federal guidance defines low-level radioactive wastes as 0.05 percent over background concentrations for uranium and 5 pCi/g over background levels for radium or compliance gross alpha.

Guidance for treatment and disposal of radionuclides removed from public drinking water sources can be found in these two fact sheets available on-line at www.des.nh.gov under "Drinking Water Fact Sheets":

WD-DWGB-3-11 Dissolved Mineral Activity in Drinking Water
WD-DWGB-22-21 Radionuclide Waste Disposal Criteria

DES is also pursuing options wherein residuals from water treatment for radionuclides may be maintained below the threshold or exempt concentrations such that other, in-state disposal options may be pursued. These will be considered on a case-by-case basis and should be discussed with DWGB technical staff prior to pursuing.

Arsenic
Best available treatment options include point of entry iron-arsenic co-precipitation/filtration, anion exchange, adsorptive media, and point of use adsorptive cartridges and reverse osmosis units. The availability of residuals disposal for iron-arsenic backwash or concentrated salt regenerant waste is critical to establish the viability of either treatment option. Alternatively, throw-away or off-site regeneration of adsorptive media may be applicable. A toxicity characteristic leaching procedure (TCLP) test is required prior to disposal or transport of spent adsorptive media, and final disposal must be to one of six permitted landfills in the state. Additional information on arsenic treatment and residuals handling are contained in these two fact sheets available at www.des.nh.gov:

WD-DWGB-3-2 Arsenic Drinking Water
WD-DWGB-3-22 Arsenic Removal and Disposal for Public Water Systems

ADDITIONAL INFORMATION

DES Drinking Water and Groundwater Bureau
(603) 271-2513
dwgbinfo@des.nh.gov
www.des.nh.gov

All DES fact sheets may be found at
www.des.nh.gov/organization/commissioner/pip/factsheets/index.htm

DHHS Radiological Health Division, www.dhhs.nh.gov/DHHS/RADHEALTH/default.htm